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| |  | | --- | | https://peer.tamu.edu/curriculum_modules/Water_Quality/images/teach.jpg |  |  |  | | --- | --- | | **TEKS for Middle School Science** | **How the TEKS are Integrated into the Lesson** | | **6.1A, 7.1A, 8.1A** Demonstrate safe practices during laboratory and field investigations as outlined in Texas Education Agency approved safety standards | During the **Activities,** students will be required to use safe practices. | | **6.1B, 7.1B, 8.1B** Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials | During the **Activities,** students will practice appropriate use and conservation of resources. | | **6.2A, 7.2A, 8.2A** Plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology | During the **Activities,** students will implement comparative and descriptive investigations. | | **6.2C, 7.2C, 8.2C** Collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers | During the **Activities,** students will collect and record data. | | **6.2E, 7.2E, 8.2E** Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends | During the **Activities,** students will analyze data and construct a graph to predict trends. | | **6.3A, 7.3A, 8.3A** Analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student. | During the **Activities** section of this unit**,**students will use experimental and observational testing to analyze and evaluate the unit material. | | **6.3D, 7.3D, 8.3D** Relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content | In the **Lesson** portion of the unit, the contributions of a scientist in the field of toxicology is explained. | | **6.4A,B; 7.4A,B; 8.4A,B** The student knows how to use a variety of tools. The student will use preventative safety equipment. | Throughout the **Activities,** students will use laboratory tools and safety equipment as needed. | | **7.5A** Recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis. | In the **Lesson** section, the process of photosynthesis is discussed. | | **7.5B** Diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids | In the **Lesson** section, photosynthesis is discussed as the basis for food chains and food webs. Food chains, webs, and energy pyramids are also presented. | | **8.5D** Recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts | In the **Lesson** section, the formulas for molecules are presented and the elements in each are identified. |  |  |  | | --- | --- | | **Next Generation Science Standards**  **Disciplinary Core Ideas** | **How the NGSS are Integrated** **into the Lesson** | | **MS-LS1.C:** Organization for Matter and Energy Flow in Organisms  ▪ Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. | In the **Lesson** section, the process of photosynthesis is explained. Phytoplankton are specifically introduced as producers in the examples of an aquatic food chain and web that are used. Also, photosynthesis is emphasized and explained with regards to the Carbon cycle. | | **MS-LS2.A:**  Interdependent Relationships in Ecosystems  ▪ Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. | This unit focuses on the interactions of living things in ecosystems (food chains and food webs) and the cycling of matter in ecosystems. | | **MS-LS2.B:** Cycle of Matter and Energy Transfer in Ecosystems  ▪ Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. | In the **Lesson** section, the importance of the cycling matter and the flow energy are emphasized. Decomposition is also discussed. | | **MS-ESS2.A:** Earth’s Materials and Systems  ▪ All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. This energy is derived from the sun and Earth’s hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth’s materials and living organisms. | This entire unit has an emphasis on the processes involved in energy flowing and matter cycling within and among the planet’s systems. | | **MS-ESS2.C:** The Roles of Water in Earth’s Surface Processes  ▪ Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. | In the **Lesson** section, the water cycle is explained and emphasized. | | **MS-ESS3.C:** Human Impacts on Earth Systems  ▪ Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth’s environments can have different impacts (negative and positive) for different living things. | In the **Introduction**, recycling by humans is mentioned as a way to conserve natural resources. In the **Lesson** section, human actions are cited as creating environmental hazards. | |